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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/787,094	03/13/2001	Martijn Jeroen Dekker	PHN 17.550	1104

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BRIARCLIFF MANOR, NY 10510

EXAMINER

BATTAGLIA, MICHAEL V

ART UNIT	PAPER NUMBER
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2652

DATE MAILED: 05/19/2004

9

Please find below, and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/787,094

Applicant(s)

DEKKER ET AL.

Examiner

Michael V Battaglia

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 2 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 March 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☒ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) 26-29 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-25 is/are allowed.
- 6) ☐ Claim(s) _____ is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 March 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

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This action, dated May 3, 2004, is in response to Applicant's amendment, filed March 4, 2004. Claims 1-29 are pending.

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:

I. Claims 1-25, drawn to a method and apparatus for recording marks representing data, each mark being written by a sequence of pulses comprising at least one write pulse, a first write pulse of a sequence of pulses being preceded by a cooling pulse having a cooling power level which is lower than an erase power level, a last write pulse of a sequence being directly followed by a rear heating pulse having a rear heating power level that is higher than the erase power level, classified in class 369, subclass 059.110.

II. Claims 26-29, drawn to a recording medium comprising an information layer that has an area containing recording parameters, classified in class 369, subclass 275.300.

2. Newly submitted claims 26-29 are directed to an invention that is independent or distinct from the invention originally claimed for the following reasons: Group I is related to Group II as combination and subcombination. Inventions in this relationship are distinct if it can be shown that (1) the combinations as claimed do not require the particulars of the subcombination as claimed for patentability, and (2) that the subcombination has utility by itself or in other combinations (MPEP § 806.05(c)). In the instant case, the combinations as claimed do not require the particulars of the subcombination as claimed because the methods and the recording devices do not require a recording medium with an information layer that comprises an area containing recording parameters. The subcombination has separate utility such as a recording medium used with a method and apparatus for recording marks representing data wherein each mark is written

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solely by a sequence of write pulses and the write pulses are not followed by a rear heating pulse nor preceded with a cooling pulse.

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

Since Applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 26-29 are withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Drawings

3. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the cooling pulse having the third cooling power level (c3) for a mark having a length $\geq 4T$ must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Allowable Subject Matter

4. Claims 1-25 are allowable over the prior art of record.

In regard to claim 1, none of the references of record alone or in combination disclose or suggest a method of recording marks representing data in a recording medium, said recording medium comprising an information layer having a phase which is reversibly changeable between a crystal phase and an amorphous phase, by irradiating the information layer with a pulsed radiation beam, each mark being written by a sequence of pulses comprising at least one write pulse, the written marks being erasable by irradiating the information layer with a radiation beam having an erase power level (e), a first write pulse of a sequence of pulses being preceded by a cooling pulse having a cooling power level (c) which is lower than the erase power level (e), said radiation beam being generated by a radiation source, characterized in that a last write pulse of a sequence is directly followed by a **rear heating pulse having a rear heating power level (r), the rear heating power level (r) being higher than the erase power level (e), and the rear heating power level being a different level from said last write pulse.**

In regard to claim 10, none of the references of record alone or in combination disclose or suggest a method of recording marks representing data in a recording medium, said recording medium comprising an information layer having a phase which is reversibly changeable between a crystal phase and an amorphous phase, by irradiating the information layer with a pulsed radiation beam, each mark having a length of nT , where T represents the length of one period of a

reference clock in a data signal and n represents a predetermined natural number larger than 1, the marks being written by a sequence of pulses comprising $(n-1)$ write pulses, the written marks being erasable by irradiating the information layer with a radiation beam having an erase power level (e), a first write pulse of a sequence of pulses being preceded by a cooling pulse having a cooling power level (c) which is lower than the erase power level (e), said radiation beam being generated by a radiation source, characterized in that **the cooling pulse has a first cooling power level (c1) when $n=2$, a second cooling power level (c2) when $n=3$, and a third cooling power level (c3) when $n \geq 4$, wherein c1, c2, and c3 are not all the same level** and the first cooling power level (c1) the second cooling power level (c2), and the third cooling power level (c3) being dependent on properties the radiation source and of the recording medium.

In regard to claim 12, none of the references of record alone or in combination disclose or suggest a recording device for recording data in the form of marks on a recording medium, said recording medium comprising an information layer having a phase which is reversibly changeable between a crystal phase and an amorphous phase, by irradiating the information layer with a pulsed radiation beam, the recorded marks being erasable by means of irradiating the information layer with a radiation beam having an erase power level (e), the device comprising a radiation source providing the radiation beam and a control unit for controlling the power of the radiation beam, the control unit being operative for providing a sequence of write pulses for writing a mark and controlling the power of the radiation beam such that it has a cooling power level (c) which is lower than the erase power level (e) preceding a first write pulse of a sequence of pulses, characterized in that the control unit is operative for controlling the power of the radiation beam such that it has a **rear heating pulse having a rear heating power level (r) directly following a last**

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write pulse of a sequence, the rear heating power level (r) being higher than the erase power level (e) and the rear heating power level being a different level from said last write pulse.

In regard to claim 21, none of the references of record alone or in combination disclose or suggest a recording device for recording data in the form of marks on a recording medium, said recording medium comprising an information layer having a phase which is reversibly changeable between a crystal phase and an amorphous phase, and said marks having lengths of nT , where T represents the length of one period of a reference clock in a data signal and n represents a predetermined natural number larger than 1, by irradiating the information layer by a pulsed radiation beam, the recorded marks being erasable by irradiating the information layer with a radiation beam having an erase power level (e), the device comprising a radiation source providing the radiation beam and a control unit for controlling the power of the radiation beam, the control unit being operative for providing a sequence of write pulses for writing a mark and controlling the power of the radiation beam such that it has a cooling power level (c) which is lower than the erase power level (e) preceding a first write pulse of a sequence of pulses, characterized in that the recording device comprises **means for determining a first value for the cooling power level (c1) when $n=2$, a second value for the cooling power level (c2) when $n=3$, and a third value for the cooling power level (c3) when $n \geq 4$, said first value for the cooling power level (c1) second value for the cooling power level (c2) and third value for the cooling power level (c3) being dependent on properties of the radiation source and the recording medium, wherein c1, c2, and c3 are not all the same level.**

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Conclusion

5. This application is in condition for allowance except for the following formal matters:

- a. Drawings do not show every feature of the invention specified in the claims as noted above and must be corrected.
- b. The presence of claims 26-29 drawn to an invention non-elected by original presentation.

Prosecution on the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

A shortened statutory period for reply to this action is set to expire **TWO MONTHS** from the mailing date of this letter.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael V Battaglia whose telephone number is (703) 305-4534. The examiner can normally be reached on 5-4/9 Plan with 1st Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hoa T Nguyen can be reached on (703) 305-9687. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

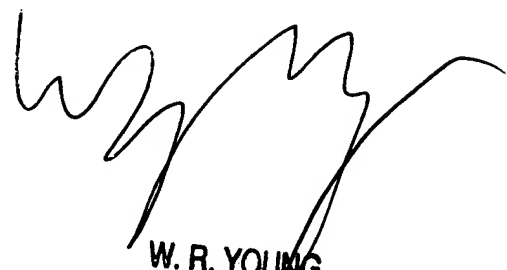
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system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Michael Battaglia



W. R. YOUNG
PRIMARY EXAMINER